

# THEORETICAL AND APPLIED GENETICS

Internationale Zeitschrift für Theoretische und Angewandte Genetik

Continuation of "Der Züchter" founded in 1929

Managing Editor: H. Stubbe, Gatersleben

#### **Editorial Board**

H. Abplanalp, Davis

L. Alföldi, Szeged

R. W. Allard, Davis

E. Andersson, Stockholm

S. Barbacki, Poznań

J. S. F. Barker, Sydney

D. K. Belyaev, Novosibirsk

A. Gustafsson, Lund

R. Hagemann, Halle

H. Kappert, Münster

H. Kihara, Misima

H. Kuckuck, Hannover-

Herrenhausen

R. C. Lewontin, Cambridge, Mass.

W. J. Libby, Berkeley

H. F. Linskens, Nijmegen

J. Mac Key, Uppsala

F. Mechelke, Stuttgart-Hohenheim

G. Melchers, Tübingen

B. R. Murty, New Delhi

R. Riley, F. R. S., Cambridge

A. Robertson, F.R.S., Edinburgh

W. Seyffert, Tübingen

H. Skiervold, Vollebekk

H. Stubbe, Gatersleben

L. D. Van Vleck, Ithaca



Springer-Verlag
Berlin Heidelberg New York

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is transferred to the publisher

The use in this journal of registered or trade names, trademarks etc. without special acknowledgement does not imply that such names, as defined by the relevant protection laws, may be regarded as unprotected and thus free for general use

Alle Rechte, einschließlich das der Übersetzung in fremde Sprachen und das der fotomechanischen Wiedergabe oder einer sonstigen Vervielfältigung, auch in Mikroform, vorbehalten. Jedoch wird gewerblichen Unternehmen für den innerbetrieblichen Gebrauch nach Maßgabe des zwischen dem Börsenverein des Deutschen Buchhandels e. V. und dem Bundesverband der Deutschen Industrie abgeschlossenen Rahmenabkommens die Anfertigung einer fotomechanischen Vervielfältigung gestattet. Wenn für diese Zeitschrift kein Pauschalabkommen mit dem Verlag vereinbart worden ist, ist eine Wertmarke im Betrag von DM 0,40 pro Seite zu verwenden. Der Verlag läßt diese Beträge den Autorenverbänden zufließen.

Die Wiedergabe von Gebrauchsnamen, Handelsnamen, Warenbezeichnungen usw. in dieser Zeitschrift berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, daß solche Namen im Sinne der Warenzeichen- und Markenschutz-Gesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften

Springer-Verlag Berlin · Heidelberg · New York

Printed in Germany — Copyright © by Springer-Verlag Berlin Heidelberg 1974/1975

## Table of Contents / Inhaltsverzeichnis

#### Originals / Originalarbeiten

Aksel, R., Analysis of Means in the Case of Nonequivalent Reciprocal Crosses in Autogamous Plants 96

Alicchio, R., Palenzona, L. D., Phenotypic Variability and Divergence in Disruptive Selection 122

Aragoncillo, C., Rodriguez-Loperena, M. A., Carbonero, P., Garcia-Olmedo, F., Chromosomal Control of Nongliadin Proteins from the 70% Ethanol Extract of Wheat Endosperm 322

Arunachalam, V., Iyer, R. D., A Nondestructive Selection Criterion for Fibre Content in Jute. II. Re-

gression Approach 37

Barratt, D. H. P., Flavell, R. B., Alterations in Mitochondria Associated with Cytoplasmic and Nuclear Genes Concerned with Male Sterility in Maize

Bement, Th. R., Krishna, V. J., Milliken, G.A., Schalles, R. R., Estimation in the General Incomplete Block Design with Applications to the Analysis of Mating Structures 110

Bulfield, G., Walker, S., Genetic Control of Metabolism: Heritability Estimates of Enzyme Activities in Ran-

dom-Bred Mice 140

Cantelo, W. W., Childress, D., Laboratory and Field Studies with a Compound Chromosome Strain of Drosophila melanogaster 1

Chaudhary, B. D., Singh, R. K., Kakar, S. N., Estimation of Genetic Parameters in Barley (Hordeum vulgare L.) I. Full, Half and Quarter Diallel Analysis 192

Cubadda, R., Bozzini, A., Quattrucci, E., Genetic Control of Esterases in Common Wheat 290

Cubero, J. I., On the Evolution of Vicia faba L. 47 Dennhöfer, L., Inherited Preferential Segregation in Translocation Heterozygotes of the Mosquito, Culex

pipiens L. 250 Dennhöfer, L., Genlokalisation auf den larvalen Speicheldrüsenchromosomen der Stechmücke Culex pipiens L. [Gene Mapping on the Salivary Gland Chromosomes of the Mosquito *Culex pipiens* L.] 279
Dimitrov, P., Nashkova, O., Petkova, S., Nashkov, D.,

Marinkov, E., Immunochemical Prognosis of Hetero-

sis in Zea mays 91

Esser, K., Semerdžieva, M., Stahl, U., Genetische Untersuchungen an dem Basidiomyceten Agrocybe aegerita. I. Eine Korrelation zwischen dem Zeitpunkt der Fruchtkörperbildung und monokaryotischem Fruchten und ihre Bedeutung für Züchtung und Morphogenese [Investigations on the Genetics of the Basidiomycete Agrocybe aegerita. I. A Correlation between the Time of Fruiting Body Production and Monokaryotic Fruiting and its Importance for Breeding and Morphogenesis]

Gottschalk, W., Müller, H. P., Quantitative and Qualitatative Investigations on the Seed Proteins of Mutants

and Recombinants of Pisum sativum 7

Gupta, D., Kovács, I., Inter-character Relationships and Heterosis Observed in Opaque-2 Maize Crosses and in their Normal Analogues 64

Gupta, D., Kovács, I., Gáspár, L., Protein Quality Traits and their Relationships with Yield and Yield Components of Opaque-2 and Analogous Normal Maize Hybrids and Inbred Lines 341

Gupta, P. K., Yashvir, Induced Mutations in Foxtail Millet (Setaria italica Beauv.) I. Chlorophyll Mutations

Induced by Gamma rays, EMS and DES 242 Halloran, G. M., Genetic Analysis of Plant Height in

Heemert, C. van, Wijnands-Stäb, K. J. A., Radiation Induced Semi-Sterility for Genetic Control Purposes in the Onion Fly Hylemya antiqua (Meigen). II. Induction, Isolation and Cytogenetic Analysis of New Chro-

mosomal Rearrangements 349
Hill, Jr., R. R., Leath, K. T., Genotypic and Phenotypic Correlations for Reaction to Five Foliar Pathogens in Alfalfa 254

Jurado-Tovar, A., Compton, W. A., Intergenotypic Competition Studies in Corn (Zea mays L.) I. Among Experimental Hybrids 205

Kawecki, A. M., Klemke, A., Przytulski, T., Polymorphism of Prealbumins and Transferrins in Blood Serum of Pigs of Polish Large White Breed 59

Legg, P. D., Collins, G. B., Genetic Parameters in a Ky 14 Ky Ex 42 Burley Population of Nicotiana tabacum L. 264

Linskens, H. F., Pfahler, P. L., De Cock, A. W. A. M., Effect of Maize (Zea mays L.) Endosperm Mutants on

the Surface Relief of the Kernel Pericarp 137
Luthra, O. P., Singh, R. K., A Comparison of Different
Stability Models in Wheat 143
Marangu, J. P., Nordskog, A. W., The Allograft Reaction as an Index of Genetic Diversity in Inbred Chikkens 215

Mendoza, H. A., Haynes, F. L., Genetic Basis of Heterosis for Yield in the Autotetraploid Potato 21

Meyer, H. H., Enfield, F. D., Experimental Evidence on Limitations of the Heritability Parameter 268

Murty, D. S., Heterosis, Combining Ability and Reciprocal Effects for Agronomic and Chemical Characters in

Sesame 294
Nassar, R. F., Cook, R. D., Dynamics of Finite Populations. III. A Note on the Rate of Approach to Homozygosity in a Haploid Population whose Size is a Poisson Random Variable 300

Palenzona, D. L., Rocchetta, G., A Multivariate Analysis of Dominance in Drosophila 259

Pederson, D. G., Arguments Against Intermating Before Selection in a Self-fertilising Species 157

Peterson, P. A., Flavell, R. B., Barratt, D. H. P., Altered Mitochondrial Membrane Activities Associated with Cytoplasmically-inherited Disease Sensitivity in Maize

Pfahler, P. L., Linskens, H. F., Ash Percentage and Mineral Content of Maize (Zea mays L.) Pollen and

Style. I. Genotypic Effects 32
Ponnuswamy, K. N., Das, M. N., Handoo, M. I., Combining Ability Type of Analysis for Triallel Crosses in

Maize (Zea mays L.) 170 Prevosti, A., Ocaña, J., Alonso, G., Distances between Populations of Drosophila subobscura, Based on Chromosome Arrangement Frequencies 231

Puertas, M. J., Lacadena, J. R., The Transmission of Rye

B Chromosomes in Natural Pollination 197
Putiyevsky, E., Katznelson, J., Zohary, D., Cytogenetic
Studies of *Trifolium* Spp. Related to Berseem. IV.
The Relationships in the *Alexandrinum* and *Vavilovi* Crossability Groups, and the Origin of the Cultivated

Berseem 355 Ramanujam, S., Tiwari, A. S., Mehra, R. B., Genetic Divergence and Hybrid Performance in Mung Bean 211

Rana, B. S., Murty, B. R., Heterosis and Components of Genetic Variation for Protein and Lysine Content in some Grain Sorghums 225

Rao, P. N., Plastid Inheritance in Job's Tears, Coix lacryma-jobi L. 363

Rutledge, J. J., Eisen, E. J., Legates, J. E., Correlated Response in Skeletal Traits and Replicate Variation in Selected Lines of Mice 26 Sage, G. C. M., de Isturiz, M. J., The Inheritance of An-

ther Extrusion in Two Spring Wheat Varieties 126 Smith, W. E., Aksel, R., Genetic Analysis of Seed-Weight in Reciprocal Crosses of Flax (Linum usitatissimum L.) 117

Smouse, P. E., Likelihood Analysis of Geographic Variation in Allelic Frequencies. II. The Logit Model and an Extension to Multiple Loci 52

Tai, G. C. C., A Method for Quantitative Genetic Analysis of Early Clonal Generation Seedlings of an Asexual Crop with Special Application to a Breeding Population of the Potato (Solanum tuberosum L.)

Templeton, A. R., Analysis of Selection in Populations Observed over a Sequence of Consecutive Generations. I. Some One Locus Models with a Single, Constant

Fitness Component per Genotype 179

Chromosome Trans-Tikhonov, V. N., Troshina, A. I., locations in the Karyotypes of Wild Boars Sus scrofa L. of the European and the Asian Areas of USSR 304

Tsunewaki, K., Endo, T. R., Mukai, Y., Further Discovery of Alien Cytoplasms Inducing Haploids and

Twins in Common Wheat 104

Turner, Jr., J. H., Ferguson, D., Performance of Cotton (Gossypium hirsutum L.) Lines Selected for High

Productivity in Three Environments 327
Turner, Jr., J. H., Smith, E. G., Ferguson, D., Selecting
for Productivity Within a Strain of Cotton, Gossypium hirsutum L., in Three Environments 86

Vaidyanath, K., Raju, K. K., Reddy, G. M., Free Aminoacid Pattern and Species Relationship in Genus Ovyza 72

Venkateswarlu, J., Rao, P. N. Apomictic Maternal Di-ploids in Tetraploid Job's Tears 274 Wright, A. J. A Genetic Theory of General Varietal

Ability for Diploid Crops 163 Zhimulev, I. F., Belyaeva, E. S., Proposals to the Problem of Structural and Functional Organization of Polytene Chromosomes 335

#### Brief Notices / Kurze Mitteilungen

Establishment of a German-Dutch Potato Department at the Gene Bank in the Institute of Crop Science and Seed Research of the Federal Agricultural Research Center, Braunschweig-Voelkenrode 331

Gamete Competition in Plants and Animals: its Biological Significance. An International Symposium August

21-23, 1975 376

International Maize Symposium — Genetics and Breeding 1975 332

### Memorial Days/Gedenktage

Belyaev, D., In Memory of Professor Boris L. Astaurov 177

#### Book Reviews / Buchbesprechungen

Actinomycetales: Characteristics and Practical Impor-

tance 43 Ando, T., Yamasaki, M., Suzuki, K., Protamines, Isolation, Characterization and Function 277

Autrum, H., Wolf, U. (Hrsg.), Humanbiologie - Ergebnisse und Aufgaben 134

Becker, P. E. (Hrsg.), Humangenetik, Bd. I, Teil 4: Blut-

gruppen 134

Bohlen, E., Crop Pests in Tansania and their Control 136 Cleland, R. E., Oenothera — Cytogenetics and Evolution

23. Colloquium der Gesellschaft für Biologische Chemie 13.—15. April 1972 in Mosbach/Baden: Protein-Protein-Interactions 44

Day, P. R., Genetics of Host-Parasite Interaction 377 Fortschritte der Botanik Bd. 35 333

Fraenkel-Conrat, H., Chemie und Biologie der Viren Goss, R. J., Regeneration, Probleme - Experimente -

Ergebnisse 222 Hirsch, G. Ch., Ruska, H., Sitte, P. (Hrsg.), Grundlagen der Cytologie 222

Iosifescu, M., Tăutu, P., Stochastic Processes and Applications in Biology and Medicine, Vol. I: Theory, Vol. II Models 44

wetz, E., Melnick, J., Adelberg, E. A., Medizinische Mikrobiologie, 3. Aufl. 135 Jawetz, E., Melnick, J.

Jollès, P., Paraf, A., Chemical and Biological Basis of Adjuvants 333

Kaudewitz, F., Molekular- und Mikroben-Genetik 45 Klinkowski, M., Mühle, E., Reinmuth, E., Bochow, H. (Hrsg.), Phytopathologie und Pflanzenschutz. BandI: Grundlagen und allgemeine Probleme der Phytopathologie und des Pflanzenschutzes, 2. Aufl. 333

Die Kulturpflanze, Bd. XXI 277

Løvtrup, S., Epigenetics. A Treatise on Theoretical Biology 277

Markert, C., Ursprung, H., Entwicklungsbiologische Genetik 334

McClearn, G. E., DeFries, J. C., Introduction to Behav io ral Genetics 223

Moav, R. (Ed.), Agricultural Genetics. Selected Topics Neuhoff, V. (Ed.), Micromethods in Molecular Biology

90 Penrose, L. S., Einführung in die Humangenetik, 2. Aufl.

Pollak, J. K., Lee, J. W., (Eds.), The Biochemistry of

Gene Expression in Higher Organisms 334 Progress in Molecular and Subcelllar Biology Vol. 3 Readings from "Scientific American": The Chemical Basis of Life 45

Recent Results in Cancer Resarch/Fortschritte der Krebsforschung / Progrès dans les recherches sur le cancer, Vol. 38: Koller, P. C., The Role of Chromosomes in 90 Cancer Biology

Residue Reviews -Residues of Pesticides and Other Contaminants in the Total Environment, Vol. 47 45 Residue Reviews -Residues of Pesticides and Other

Contaminants in the Total Environment, Vol. 48 134 Residue Reviews - Residues of Pesticides and Other Contaminants in the Total Environment, Vol. 49 134 Sager, R., Cytoplasmic Genes and Organelles 46

Stern, C., Principles of Human Genetics, 3rd ed. Stewart, P. R., Letham, D. S. (Eds.), The Ribonucleic

Acids 223 Stubbe, H., History of Genetics. From Prehistoric Times to the Rediscovery of Mendel's Laws 46

Wilson, E. O., Bossert, W. H., Einführung in die Populationsbiologie 278

Witkowski, R., Prokop, O., Genetik erblicher Syndrome und Mißbildungen 135

Wrighton, R. F., Elementary Principles of Probability

and Information 223

Zeller, F. J., Fischbeck, G. W., Chromosomenadditionen, -substitutionen und -translokationen als Grundlagen für die Übertragung artfremden Erbmaterials in den Saatweizen 278